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to postpone mention of those undertaken with the assistance of many collaborators (which record the advance of science through the researches of others), or dealing primarily with applied science. However important this latter work may have been, — and we should be far from underrating its importance, especially in the development of science in America, — it not only hinders a proper retrospect, an independent *coup d'oeil*, of his remarkably extensive and valuable contributions to the vertebrate zoölogy of North America, but it seems to demand, at some future time, a repetition of this work, with its almost painful detail and voluminous indexes. The first was the only pressing need: for the other, we could have contented ourselves for the present with the indexes of the everywhere procurable annual records, Smithsonian reports, and fish-commission publications.

A scientific friend, himself a bibliographer, does not look with complacency upon the announcement that similar bibliographies will be given of other still living naturalists. He asks whether those directing or engaged upon this work could not turn their bibliographic energies to better account in another direction. Fathers of a broad science, or pioneers in a vast field, who cover that field, are few indeed; and only their bibliographies, when carried out with the fulness of that which furnishes us our text, can have any possible permanent, or even great temporary, value. What are really wanted are topical and geographical bibliographies, which shall lighten the labor of the expert, and lessen the chances of incorrect statement, and, above all, of unnecessary re-statement. These are the true aids to progress for a generation burdened with a literature vast, ill-assorted, inchoate. Individual bibliographies do not penetrate its depths. Let our zealous bibliographers devote to such work the same time and pains they would give to that proposed, and the result will be of tenfold immediate value, and it will have at least some lasting worth.

LETTERS TO THE EDITOR.

**.* Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.*

The zero meridian of longitude.

IN arranging meridians for perpetual usefulness and the best practical results, the location of the 180th degree is of far more importance than that of zero or any other.

When we meet a ship of another nation at sea, we determine upon speaking, one of the most important objects of which is to compare longitudes. We do exchange longitudes, but on comparison we find a large difference between them. Then the question arises, Is one of our chronometers wrong, or are we mistaken as to the meridian from which the other ship reckons her longitude? This ship, by this time, is beyond the reach of our further inquiry, and hence the question cannot be satisfactorily answered. We are in more doubt than before speaking, confusion has been worse confounded, and only because we do not know positively the other's zero meridian. Among merchant shipping, on long voyages, just this sort of trouble occurs constantly, perhaps daily, to the great enhancement of risk to the safety of ships, cargoes, and crews.

Again: an English or an American ship is in mid-Pacific, steering east; crosses the 180th degree of her reckoning, from Greenwich; and then meets a French ship standing west, which has crossed the 180th degree from Paris. They speak, and each asks the other to report him at Lloyds. They arrive in their respective ports, and each reports the other, as requested: but one report states that the speaking occurred on one day, say Monday, the 1st of a month; and the other on another day, say Tuesday, the 2d of the same month. But I will not multiply instances. These two will give some idea, though faintly, of the risk to property and life, as well as the confusion of dates, caused by the present unsettled condition of meridians.

If the 180th meridian were universally recognized as passing through Bering Strait, it could be so projected as to pass clear, or nearly so, of all land throughout its entire length; and, this being true, it could be made the dividing-line of days, naturally and properly, with the greatest possible advantage to everybody everywhere.

If a meridian passing through Bering Strait were adopted as the 180th, then the zero meridian would pass through central Europe, and enter Africa near Tunis, and the Atlantic Ocean from the coast of Guinea, thereby giving Norway, Denmark, Germany, Austria, Switzerland, and Italy the opportunity of having their national observatories upon it, on their own soil.

C. BORUM.

Norfolk, Va., June 5.

Crystallization of glucose in honey.

A gentleman of our city who is engaged extensively in bee-culture has furnished me with the following rather remarkable incident:—

On opening a cap of honey that had been made subsequent to July 1 of last year, it was discovered that the entire bottom was covered with a layer of some peculiar white powdery substance never before observed. Such an occurrence being new to him, he conferred with some of his acquaintances, also engaged in bee-raising, but with the uniform result of furnishing each with a bit of news. A sample of the white substance was submitted to me, and on exami-

nation was proved to be, with the exception of slight extraneous matter, almost perfectly pure glucose.

The presence of glucose in honey is well known; but a crystallization or separation such as here described appears unknown, in this district at least, and possibly in others as well. Therefore it is that I deem this of sufficient moment to lay before your readers. A few other facts are pertinent. The bees in whose hive the glucose was found have never been artificially fed, nor has any special attention been paid to promote an increase in the yield of honey. Nevertheless, the yield from the hive containing the powder has exceeded, by almost three times, that of any previous year. A sample of the honey will be furnished me, when I propose determining the relative quantity of glucose contained in it, thinking that by that means some light may be thrown on this apparently unique occurrence.

SIMON FLEXNER.

Louisville, June 18.

[All honey contains glucose and cellulose in about equal proportions. It is not uncommon for honey to granulate or crystallize in the comb. This crystallization often occurs when the cells are but partly full of honey, so that the granulated sugar only occupies a part of the cell. If such combs are placed in a hive, the bees will add honey, and produce the phenomenon noticed, and described above. There is nothing remarkable or very exceptional in this occurrence, though it occurs so rarely that it is not strange that most apiarists have failed to observe it.—ED.]

North-eastern and north-western Indian implements.

In reply to a note contained in *Science*, iii. 701, I beg leave to explain that Dr. Abbott misapprehends the object of the paper there discussed, my point of view therein having been that of an observer simply, not that of a critic. The particular puk-gah-mah-gun in question received description and illustration in virtue of the definite facts, that it represents the stone age of the north-west, that it is a well finished and mounted typical weapon, that it is of known tribal origin and of ascertained uses, and that, finally, it has an interesting and assured history. If my brief notice of this weapon ignored the diversity of figure found among objects of the war-club pattern, it was partly because I had undertaken to present my notes in a condensed form, and partly, also, because I believed such modification of common type generally understood by those who would be likely to honor me with a reading. I venture in this place to append one or two statements which may, perhaps, have the effect to place matters in a clear light.

The Ojibwas of Red Lake originally descended thither from Rainy Lake, their primary point of departure having been the 'Great Ojibwa,' or Lake Superior, where their tribe claims to have been centralized for ages. The Red-Lakers agree that they effected settlement here about a century ago, after a desperate struggle of long duration with the Sioux, who then inhabited the region; and they impute their eventual success, not so much to superior prowess, as to the fact that the Ojibwas fought with weapons procured from French traders at the north, while the more isolated Sioux were restricted to war implements of their own manufacture. The Red Lake band continued in the stone age, so far as their domestic furnishings were concerned, long after they had discarded their tribal weapons of stone and bone. As they are by no means addicted to nice culinary distinctions, it occurred to me, in the course of investi-

gation, that the bone-breakers, being adapted to deal an effective blow, might, at the early day preceding contact with white traders, have served their owners the double purpose of utensil and weapon; that, in short, the objects used only within historic times for breaking up the bones of game might likewise have been employed prior to such time in dealings with their foe. This conjecture determined the particular line of inquiry which I followed in questioning the natives, and which was without positive results always. The matter would be unworthy of mention here, except for the purpose of correcting a misconception.

FRANC E. BABBITT.

What's in a name?

It is a pleasant diversion to note the correspondences between people's names and occupations. Here, for instance, are the Meisels, German lithographers; and *meissel* is the German word for chisel, a cutting instrument. Wagner, the inventor of the palace-car, learned the wagon-maker's trade, and subsequently built his railroad-wagon; while his rival, George Pullman, justifies his name by pulling his fellow-men about the world in very sumptuous railroad-coaches.

Turning to the New-York directory, you see, that, out of the 204 Wagners there set down, 10 are in some way concerned with the making or sale of wagons. Out of 132 Carpenters, 17 are either carpenters or builders, or dealers in wagon-materials. Of 1,174 Schmidts, Smidts, Schmiedes, Schmidts, Schmitts, and Smiths in New York, 202 are men who use edged tools for the cutting of wood or iron, including blacksmiths, goldsmiths, cabinet-makers, carpenters, etc.: a large number, not included in the 202, are shoemakers and tailors; but these can hardly be called smiths or artificers.

In the Boston directory, out of 336 Clarks (only a small fraction of the whole), 63 are either store-clerks or religious clerics, or engaged in pen-work of some kind. There are 420 Schneiders (or cutters) in New York, and 29 of them are tailors; but of the 91 Sneiders, Sniders, and Snyders, there is not one tailor, and only two cutters of any sort; namely, a cap-maker and a dressmaker. It would seem that the Sniders, in mixing English blood with their own, and trying new fortunes in foreign lands, had got farther away from the instincts of the original trade that gave their German ancestors their name. It certainly seems that it is safe, looking at the data given, to assume that the hereditary tendencies denoted by the name are in many cases marvellously persistent. I have no doubt, that, notwithstanding the continual mingling of new blood (by marriage) with that of each class of tradesmen, we should yet find, if we could know the bent of mind of all members of the class, that the ancestral preferences and aptitudes exist in some degree in each and all. It is to be remembered, that, in the case of such names as Carpenter and Schneider, there would be a more or less strong disinclination for the owners to engage respectively in carpentry and tailoring, owing to the dislike of having to endure the lifelong punning on their names.

All that can be shown is, that, in the case of a certain number (say, one-sixth) of the members of a family or clan, the ancestral occupation reveals its pristine attraction. But the exceptions are notable. Thackeray's ancestors, according to Bardsley, were thatchers (thack, thatch, hence the thacker, and the last modified into the thackery, the thackeray, i.e., the thatcher). Shakeshaft, Shakspeare, Breakspear, from their prowess in battle; Spencer, he who has charge of the spence, or buttery; Whittier, from